

COMPONENTS AND VALUES

CONDENSERS	Values (μF)
C1	Aerial series condenser .. 0.0005
C2	Aerial circuit MW and LW coupling potential divider .. 0.0001
C3	Aerial SW coupling condenser .. 0.0002
C4	V1 cathode by-pass .. 0.1
C5	HT circuit RF by-pass .. 0.1
C6	V1 osc. anode coupling .. 0.00007
C7	V1 SG RF by-pass .. 0.00026
C8	V1, V2 SG's decoupling .. 0.00025
C9	V2 CG decoupling .. 0.1
C10	V2 cathode by-pass .. 0.1
C11	IF by-pass condensers .. 0.00025
C12	V3 triode and V4 CG's decoupling .. 0.25
C13	AF coupling condensers to V3 triode .. 0.02
C14	IF by-pass condensers .. 0.00015
C15	Part of variable tone control .. 0.01
C16	V3 triode to V4 AF coupling .. 0.01
C17	V4 to V5 AF coupling .. 0.01
C18	V3 triode to V6 AF coupling .. 0.01
C19	V5, V6 cathodes-by-pass .. 5.0
C20	HT smoothing .. 16.0
C21	Auto GB circuit by-pass .. 8.0
C22	Mains RF by-pass .. 25.0
C23	Aerial SW trimmer .. 0.01
C24	Aerial circuit MW trimmer .. —
C25	Aerial circuit LW trimmer .. —
C26	Oscillator circuit tuning .. —
C27	Osc. circuit SW trimmer .. —
C28	Osc. circuit MW trimmer .. —
C29	Osc. circuit LW trimmer .. —
C30	Osc. circuit SW tracker .. —
C31	Osc. circuit MW tracker .. —
C32	Osc. circuit LW tracker .. —
C33	1st IF trans. pri. trimmer .. —
C34	1st IF trans. sec. trimmer .. —
C35	2nd IF trans. pri. trimmer .. —
C36	2nd IF trans. sec. trimmer .. —

OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial anti-modulation choke .. 20.0
L2	Aerial circuit SW tuning coil .. 0.1
L3	Aerial circuit MW tuning coil .. 3.0
L4	Aerial circuit LW tuning coil .. 17.0
L5	Osc. circuit LW tuning coil .. 0.1
L6	Osc. circuit MW tuning coil .. 3.0
L7	Osc. circuit LW tuning coil .. 5.0
L8	Oscillator SW reaction coil .. 0.5
L9	Oscillator MW reaction coil .. 1.0
L10	1st IF trans. Pri. .. 9.0
L11	1st IF trans. Sec. .. 11.0
L12	2nd IF trans. Pri. .. 12.0
L13	2nd IF trans. Sec. .. 9.0
L14	Speaker speech coil .. 2.0
L15	Hum neutralising coil .. 0.15
L16	Speaker field coil .. 1,000.0
T1	Speaker input Pri., total .. 660.0
	Sec. .. 0.5
T2	Mains Heater sec. .. 17.5
	Rect. heat. sec. .. 0.05
	HT sec., total .. 200.0
S1-S9	Waveband switches .. —
S10	Gram. pick-up switch .. —
S11	Mains switch, ganged R15 .. —

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6A8G	248	6.2	100	3.6
	134	4.0	—	—
V2 6U7G	248	7.5	100	2.2
V3 6D7G	102	0.4	—	—
V4 6X5G	48	0.8	—	—
V5 6V6G	235	28.0	248	1.5
V6 6V6G	235	28.0	248	1.5
V7 5Y3G	328†	0.8	—	—
T1 6G5	38	1.9	—	—

† Each anode, AC.

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	Anti-modulation choke damping ..	10,000
R2	V1 tetrode CG decoupling ..	500,000
R3	V1 tetrode CG resistance ..	3,000,000
R4	V1 fixed GB resistance ..	150
R5	V1 osc. CG resistance ..	500,000
R6	Osc. circuit MW reaction damping ..	2,500
R7	V1 osc. anode HT feed resistance ..	25,000
R8	V1 osc. CG resistance ..	50,000
R9	V1, V2 SG's HT feed resistance ..	25,000
R10	V2 and T.I. CG's decoupling ..	500,000
R11	V2 fixed GB resistance ..	300
R12	V3 diodes load resistance ..	500,000
R13	IF stopper ..	25,000
R14	Gramophone PU shunt ..	25,000
R15	Manual volume control ..	500,000
R16	V3 triode CG resistance ..	500,000
R17	V3 triode anode load ..	250,000
R18	Variable tone control ..	100,000
R19	V4 CG input pot. divider ..	500,000
R20		35,000
R21	V3 triode and V4 CG's decoupling ..	250,000
R22	V4 anode load resistance ..	250,000
R23	V5 CG resistance ..	500,000
R24	V6 CG resistance ..	500,000
R25	V5 anode RF stopper ..	100
R26	V6 anode RF stopper ..	100
R27	V5, V6 GB resistance ..	300
R28	V3 triode and V4 auto GB resistance ..	25
R29	T.I. anode HT feed ..	250,000

Scale Lamps.—These are two National Union miniature bayonet cap types, marked N51. The rating is presumably 6.8 V, 0.3 A.

TABLE AND DIAGRAMS

Button	Closed	Open
LW	S1, S4, S7, S8	S2, S3, S5, S6, S9, S10
MW	S1, S3, S6, S9	S2, S4, S5, S7, S8, S10
SW	S2, S5, S8, S9	S1, S3, S4, S6, S7, S10
Gram.	S1, S8, S9, S10	S2, S3, S4, S5, S6, S7

provided at the rear of the chassis for a high impedance (10,000 Ω) speaker.

Condensers C25, C26.—These are two dry electrolytics in a single tubular metal case on the chassis deck. Beneath the chassis there are three tags. The plain one is the common negative; that spotted red is the positive of C25 (16 μF); while that spotted yellow is the positive of C26 (8 μF).

Condensers C24, C27.—These are two dry electrolytics (35 V working) in a single carton beneath the chassis, having a common negative (black) lead. The red lead is the positive of C24 (5 μF), while the yellow is the positive of C27 (25 μF).

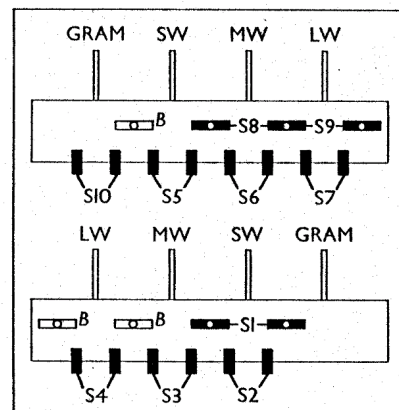
Trimmers.—The aerial circuit trimmers (C29-C31) are in a row below the press-button switch unit (looking from the underside of the chassis), while the oscillator circuit trimmers (C34-C36) are in a similar row above the switch unit. All six trimmers are adjustable through holes in the front of the chassis.

Trackers.—The three variable trackers (C37-C39) are mounted beneath the chassis, and are adjustable through holes in the chassis deck.

Chassis Divergencies.—C7 and R8 are not shown on the makers' diagram. The common negative of C24 and C27 goes to chassis in the makers' diagram, but in our model it was connected to the HT negative line as shown in our circuit. The makers' diagram shows an extra 0.00025 μF condenser across C19, but this was not in our chassis.

RADIOGRAM 705 MODIFICATIONS

The only difference in the 705 radiogram (apart from the inclusion of a 2,000 Ω pick-up and a motor) is that the speaker is a 10-in. model, instead of the 8-in. model used in the 702. Its resistance values remain the same.



Diagrams of both sides of the switch unit. The upper one shows the switches seen from the underside of the chassis, while the lower one shows those on the side nearest the chassis deck.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on mains of 228 V, using the 220-230 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum. There was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

If, as in our case, V2 should become unstable when its anode and screen currents are being measured, it can be stabilised by connecting a non-inductive condenser of about 0.1 μF from the electrode concerned to chassis.

GENERAL NOTES

Switches.—All the switches, with the exception of S11, the mains switch, are of the press-button type, and are contained in a single double-sided unit mounted inside the front of the chassis.

The switch unit is indicated in our underchassis view, but for identification of the individual switches the diagrams in col. 3 must be consulted. The upper diagram of the two shows the switches seen when looking at the underside of the chassis, while the lower one shows the switches on the unit which are normally hidden from view by the chassis deck. To examine these, the whole switch unit must be removed. To do this, remove the screws holding the two banks of three trimmers (above and below the switch unit) and the two screws holding the unit to the chassis and gently ease the unit out, taking care not to break any connections.

The table (col. 2) gives the switches which are closed and open when each button is depressed.

S11 is the QMB mains switch, ganged with the volume control R15.

Coils.—L1 is beneath the chassis, close to the aerial lead entry point. L2-L4; L5-L9 and the IF transformers L10, L11 and L12, L13 are in four screened units on the chassis deck. The second unit also contains R6, C8, while the IF units contain their associated trimmers.

CIRCUIT ALIGNMENT

IF Stages.—Remove the grid (top cap) connection of **V1**, and connect a 0.5 MO resistor between the connection and the cap. Connect signal generator between the cap. (via a 0.00025 μ F condenser) and chassis. Switch set to MW, and turn gang and volume control to maximum.

Feed in a 465 KC/S signal, and adjust **C43**, **C42**, **C41** and **C40** for maximum output. Re-check, then remove the 0.5 MO resistor and replace top cap.

RF and Oscillator Stages.—With the gang at maximum, pointer should be at the right hand terminations of the horizontal scales. Connect signal generator to **A** and **E** leads, via a suitable dummy aerial. Turn volume control to maximum.

SW.—Since the SW tracker is in series with the MW and LW trackers it is essential to align the SW band first.

Switch set to SW, tune to 15 MC/S on scale, and feed in a 15 MC/S (20 m) signal. Adjust **C34** for maximum output, using the peak involving the least trimmer capacity. Now adjust **C29** for maximum.

Feed in a 6 MC/S (50 m) signal, tune it in, and adjust **C37** for maximum output, while rocking the gang for optimum results. Return to 15 MC/S and re-check **C29** and **C34**. Repeat until no further improvement results.

MW.—Switch set to MW and tune to 250 m on scale. Feed in a 250 m (1,200 KC/S) signal, and adjust **C35**, then **C30** for maximum output. Feed in a 520 m (580 KC/S) signal, tune it in, and adjust **C38** for maximum output, while rocking the gang for optimum results. Return to 250 m and re-check **C35** and **C30**. Repeat until no further improvement results.

LW.—Switch set to LW, and tune to 1,250 m on scale. Feed in a 1,250 m (240 KC/S) signal, and adjust **C36**, then **C31**, for maximum output. Feed in a 2,000 m (150 KC/S) signal, tune it in, and adjust **C39** for maximum output, while rocking the gang for optimum results. Return to 1,250 m and re-check **C36** and **C31**. Repeat until no further improvement results.